

# The Interface



## RUMINATION: Relationships with Physical Health

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This ongoing column is dedicated to the challenging clinical interface between psychiatry and primary care—two fields that are inexorably linked.

### ABSTRACT

Rumination is a form of perseverative cognition that focuses on negative content, generally past and present, and results in emotional distress. Initial studies of rumination emerged in the psychological literature,

particularly with regard to studies examining specific facets of rumination (e.g., positive vs. negative rumination, brooding vs. self-reflection, relationships with catastrophic thinking, role of impaired disengagement, state vs. trait features) as well as the

presence of rumination in various psychiatric syndromes (e.g., depression, alcohol misuse, generalized anxiety disorder, social anxiety disorder, obsessive compulsive disorder, posttraumatic stress disorder, bulimia nervosa). Rumination studies are now emerging in the somatic literature, particularly in relationship to pain. In these studies, rumination appears to be associated with symptom magnification as well as poorer clinical outcomes. While still a nascent field, the assessment and treatment of rumination in primary care settings is beginning to unfold.

### KEY WORDS

Primary care, perseverative cognition, rumination, Pain Catastrophizing Scale

### INTRODUCTION

*“There are more things, Lucilius, that frighten us than injure us, and we suffer more in imagination than in reality.”*

—Seneca, Epistulae ad Lucilium

In this edition of *The Interface*, we examine the concept of rumination, beginning with its origins in the psychological literature, and explore emerging ramifications in the primary care setting. Given a range of definitions as well as numerous clinical facets, rumination is generally described as a form of perseverative cognitive processing. While present in a number of psychiatric syndromes, rumination also appears to influence some somatic syndromes such as perceptions of health. In somatic syndromes, rumination may play a role in symptom magnification as well as psychobiological changes due to rumination-induced stress.

Rumination in somatic syndromes is most studied with regard to pain, and findings indicate that rumination typically results in an intensification of pain symptoms as well as poorer clinical outcomes. While assessment tools are limited and the treatment of rumination remains in its infancy, clearly rumination plays an important and emerging role in primary care settings.

### A WORKING CLINICAL DEFINITION OF RUMINATION

According to the online Merriam-Webster dictionary, the word “rumination” is defined as an “obsessive or abnormal reflection upon an idea or deliberation over a choice.”<sup>1</sup> As expected, the psychological definition of rumination is substantially more complicated, which is likely due to the observation that rumination involves a variety of aspects.<sup>2</sup> However, the relevance of particular aspects appear to vary from author to author.

With regard to a clinical definition, Nolan-Hoeksema et al<sup>3</sup> describe rumination as a mode of responding to distress—one that entails repetitively and passively focusing on the distress as well as its possible causes and consequences. These authors emphasize that rumination represents the *process* of thinking perseveratively about one’s feelings and problems, rather than rumination being solely related to thought content. Lynn et al<sup>4</sup> describe rumination as “repetitive and passive thinking...that dominates attention.”<sup>4</sup> Ito et al<sup>5</sup> describe rumination as a tendency to continue to think about something bad, harmful, or unhelpful for a long time.

In addition to various clinical

definitions of the word, there are a number of facets related to the concept of rumination. For example, in a broad sense, Verkuil et al<sup>6</sup> aptly describe rumination as a form of perseverative cognition, which includes other types of psychological processes such as worry. Likewise, according to Watkins,<sup>7</sup> rumination may be either a detrimental or beneficial psychological process (i.e., at times, rumination may be beneficial when it is specific, concrete, and process-focused). Rumination may consist of sub-components such as passive brooding as well as active self-reflection.<sup>8</sup> In addition, according to Sullivan et al,<sup>9</sup> rumination may be a distinct dimension of catastrophic thinking, which is highly relevant to our upcoming review of the studies on pain. Rumination has also been uniquely described as a process of impaired disengagement, which signifies that prolonged processing of self-referent material is due to an impairment in the ability to disengage one’s attention.<sup>10</sup> Finally, rumination may exist as a trait or state psychological feature.<sup>11</sup>

In approaching a working definition for this article, we will refer to rumination as a detrimental psychological process characterized by perseverative thinking around negative content that generates emotional discomfort. In this context, we wish to emphasize that rumination refers to both the thought process (i.e., excessive thinking) as well as thought content (i.e., negative). Note that this definition may be at odds with some of the previous authors.

### RUMINATION VERSUS WORRY

According to Verkuil et al,<sup>6</sup> rumination and worry are both forms of perseverative cognition. In

support of this perspective, Nolan-Hoeksema et al<sup>3</sup> and Hughes et al<sup>12</sup> indicate that rumination and worry are different but overlapping psychological constructs.

In highlighting the differences between rumination and worry, Nolan-Hoeksema et al<sup>3</sup> state that rumination tends to be anchored around the sustained processing of negative material whereas worry tends to be anchored around the sustained processing of uncertainty. The content of rumination tends to be more focused in the past and/or present whereas worry tends to be more focused on the future. The content of rumination may be condensed into a distinct theme of loss whereas the content of worry tends to condense into themes of anticipated threat. Again, while the two constructs have overlapping features, they also have differing features.

### RELATIONSHIPS BETWEEN RUMINATION AND VARIOUS PSYCHIATRIC DISORDERS

Rumination has been associated with a number of psychiatric syndromes and disorders. From our review of the psychological literature, rumination appears to be most studied in relationship to acute stressors<sup>13,14</sup> and depressive syndromes.<sup>3,5,15–17</sup> However, rumination has also been associated with alcohol misuse<sup>3</sup> as well as anxiety symptoms, generalized anxiety disorder, social anxiety disorder, obsessive-compulsive disorder, posttraumatic stress disorder, and bulimia nervosa.<sup>11</sup> That rumination emerges in a number of different psychiatric syndromes has led some researchers to conclude that the ruminative process is a transdiagnostic one—i.e., that rumination is a psychological

feature that traverses a number of different psychiatric phenomena.<sup>11,18</sup> Therefore, rumination is not pathognomonic or uniquely associated with any particular psychiatric syndrome or disorder.

## RELATIONSHIPS BETWEEN RUMINATION AND PHYSICAL HEALTH/ILLNESS

**The role of rumination in somatic health.** Investigators have reported a number of associations between rumination and impaired somatic health.<sup>6</sup> In summarizing this literature, the relationship between rumination and impaired somatic health appears, in our opinion, to be mediated by at least two general factors. First, rumination (i.e., cognitive over-focusing) may unintentionally result in a magnification of perceived symptoms (i.e., the perception of somatic symptoms is intensified). Second, rumination may result in genuine somatic distress<sup>19,20</sup> through several physiological pathways, particularly in younger individuals.<sup>21</sup> In support of a proposed physiological pathway, Zoccola<sup>22</sup> has found associations between both trait and state rumination, and cortisol responses. (This finding was not confirmed in a sample of undergraduate students.<sup>23</sup>) In addition, Hogan and Linden<sup>24</sup> have reported that rumination exhibits a deleterious effect on resting and ambulatory blood pressure. To summarize, rumination may have various negative effects on perceived or actual health, either through the unintentional magnification of symptoms and/or the associated effects of rumination-induced biological stress, respectively.

**Associations between rumination and perceived impairment in general somatic health.** A number of studies have

confirmed associations between rumination and the perception of poor physical health. For example, rumination has been associated with health anxiety in college students,<sup>25</sup> emotional distress in chronic illness,<sup>26</sup> self-reported somatic complaints among British and Dutch children,<sup>27</sup> and hypochondriasis.<sup>28</sup>

**Rumination and pain.** The largest number of clinical studies in this somatic area are those examining relationships between rumination and pain, and most have studied pain populations with the Pain Catastrophizing Scale (PCS).<sup>29</sup> The PCS has three underlying components—rumination, helplessness, and magnification—and in studies, rumination is oftentimes the most germane.

As for studies using the PCS, Sullivan, Bishop, and Pivik<sup>29</sup> examined 425 Canadian undergraduate students and, as expected, higher scorers on this scale exhibited more negative attitudes toward pain, greater emotional distress, and greater pain intensity. In a study from Belgium, Nijs et al<sup>30</sup> examined 36 patients with widespread pain due to chronic fatigue syndrome using the PCS; pain catastrophizing was related to overall bodily pain.

As we noted previously, several studies have reported explicit elevations in the rumination subscale of the PCS with regard to pain. For example, in a study from the United States, Gilliam et al<sup>31</sup> examined 97 healthy volunteers using the PCS in an experimentally induced pain study; participants who scored high on the rumination subscale of the PCS reported the greatest degree of pain and distress. In another study from the United States, Tripp<sup>32</sup> examined athletes undergoing knee surgery using the PCS; rumination was the lone

significant psychological predictor of postoperative pain at 24 hours and 48 hours. In a Canadian study, Sullivan et al<sup>33</sup> examined 150 patients with chronic pain using the PCS; rumination was a significant predictor of disability. In a study from Belgium, Van Damme et al<sup>34</sup> examined 162 low-back-pain patients and 100 fibromyalgia patients using the PCS; rumination was a contributing factor to higher pain levels. In a study from the United Kingdom, Galfin et al<sup>35</sup> examined 36 palliative-care patients using the PCS, and found that higher levels of rumination were positively correlated with increased psychological distress. Finally, in a Canadian study, Devoulyte and Sullivan<sup>36</sup> examined 50 adults with upper respiratory illness using the PCS; investigators found that rumination correlated with illness severity.

**Related studies: Rumination and medical outcome.** Several studies have found associations between rumination and medical outcome. For example, in a study from the United States, Johansen assessed patients with chronic back pain using the Action Control Scale 90 and found that rumination was associated with poorer outcomes.<sup>37</sup> In a British study, Len et al<sup>38</sup> examined 101 cardiac patients who were scheduled for elective coronary angiography; rumination scores with regard to anger were associated with self-reported cardiac disease severity. Finally, in a study from the United States, Turner et al<sup>39</sup> examined the effects of cognitive-behavioral therapy in patients with chronic temporomandibular disorder; at one-year follow-up, patients with higher baseline levels of rumination reported higher activity interference.

**Summary.** Given the potential limitations of these studies with regard to the construct of rumination, including varying ways in which rumination was measured, a consistent theme emerges—that rumination has an overall negative effect on physical health. Again, whether this is through the unintentional magnification of symptoms, through rumination-generated psychobiological changes, and/or through other processes is unknown.

## ASSESSMENT OF RUMINATION

There are a number of available measures for the assessment of rumination, including the Response Styles Questionnaire-Ruminative Responses Scale,<sup>40</sup> the Rumination Questionnaire,<sup>41</sup> the Rumination Inventory,<sup>2</sup> and the PCS.<sup>29</sup> Of these, the PCS may have the most potential utility in primary care settings.

The PCS is a 13-item self-report inventory with a 5-point Likert-style response scale (ratings range from “not at all” to “always”) that assesses pain catastrophizing in both clinical and nonclinical populations. The individual items assess the degree to which the respondent experiences thoughts or feelings in response to pain, and scores range from 0 to 52. The 13 items represent three components: rumination, magnification, and helplessness. The rumination subscale is composed of items 8 to 11. There is no fee for the use of this scale, which is located at <http://sullivan-painresearch.mcgill.ca/> under “PCS.”

## POTENTIAL TREATMENTS FOR RUMINATION

The treatment of rumination in clinical settings appears to be in its infancy. Nolan-Hoeksema et al<sup>3</sup> suggest the following intervention possibilities: 1) distraction with

alternative activities such as socializing or physical activity; 2) various mindfulness therapies; 3) cognitive therapy; and 4) interpersonal therapy.

Watkins has developed a form of cognitive behavioral therapy called Rumination-Focused Cognitive-Behavioral Therapy (RFCBT).<sup>42</sup> This therapy approach is fairly complicated, but is based upon the concept that rumination can be helpful or unhelpful. The idea behind the treatment is to shift the patient from unhelpful to helpful cognitive processing. To do so, the therapist analyzes the extent of helpful and unhelpful rumination, identifies associated behaviors with each form of rumination, and then incorporates counter-ruminative behaviors into the treatment, such as distraction. Patients are also taught warning signs of unhelpful rumination as well as action plans for interruption. If this treatment approach is eventually adapted to primary care settings, either in a manualized form or DVD, RFCBT could be a practical approach to curbing rumination in such settings.

## CONCLUSION

Rumination is a form of perseverative cognition and a complicated psychological construct. From its birth in the psychological literature, rumination has now been examined in relationship to various somatic and pain experiences as well as pain outcomes in varying medical settings. In this latter context, the role of rumination in pain can be feasibly assessed using the PCS, which contains a rumination subscale. While the treatment of rumination remains in its infancy, and is presently nonexistent in primary care settings, possibilities

such as RFCBT may in the future be adapted into a manualized or DVD approach for use in primary care settings. Rumination clearly bridges both psychiatric and primary care settings.

## REFERENCES

1. Merriam-Webster Online Dictionary. Rumination. <http://www.merriam-webster.com/medical/rumination>. Accessed on 8/11/11.
2. Pravettoni G, Leotta N, di Nuovo S. Rumination Inventory. *Ricerche di Psicologia*. 2007;30:117–126.
3. Nolen-Hoeksema S, Wisco BE, Lyubomirsky S. Rethinking rumination. *Perspectives in Psychological Science*. 2008;3:400–424.
4. Lynn SJ, Barnes S, Deming A, Accardi M. Hypnosis, rumination, and depression: catalyzing attention and mindfulness-based treatments. *Int J Clin Exp Hypn*. 2010;58:202–221.
5. Ito T, Takenaka K, Tomita T, Agari I. Comparison of ruminative responses with negative rumination as a vulnerability factor for depression. *Psychol Rep*. 2006;99:763–772.
6. Verkuil B, Brosschot JF, Gebhardt WA, Thayer JF. Perseverative cognition, psychopathology, and somatic health. In: Nyklicek I, Vingerhoets AJJM, Zeelenberg M, (eds.). *Emotion Regulation and Well-Being*. New York: Springer;2011;85–100.
7. Watkins ER. Depressive rumination: investigating mechanisms to improve cognitive behavioural treatments. *Cogn Behav Ther*. 2009;38:S8–14.
8. Marroquin BM, Fontes M, Scilletta A, Miranda R. Ruminative subtypes and coping responses: active and passive pathways to



- depressive symptoms. *Cogn Emot.* 2010;24:1446–1455.
9. Sullivan MJL, Lynch ME, Clark AJ. Dimensions of catastrophic thinking associated with pain experience and disability in patients with neuropathic pain conditions. *Pain.* 2005;113:310–315.
10. Koster EHW, de Lissnyder E, Derakshan N, De Raedt R. Understanding depressive rumination from a cognitive science perspective: the impaired disengagement hypothesis. *Clin Psychol Rev.* 2011;31:138–145.
11. Watkins ER. Depressive rumination and co-morbidity: evidence for brooding as a transdiagnostic process. *J Ration Emot Cogn Behav Ther.* 2009;27:160–175.
12. Hughes ME, Alloy LB, Cogswell A. Repetitive thought in psychopathology: the relation of rumination and worry to depression and anxiety symptoms. *J Cogn Psychother.* 2008;22:271–288.
13. Moberly NJ, Watkins ER. Ruminative self-focus and negative affect: an experience sampling study. *J Abnorm Psychol.* 2008;117:314–323.
14. Moberly NJ, Watkins ER. Ruminative self-focus, negative life events, and negative affect. *Behav Res Ther.* 2008;46:1034–1039.
15. Hong W, Abela JR, Cohen JR, et al. Rumination as a vulnerability factor to depression in adolescents in mainland China: lifetime history of clinically significant depressive episodes. *J Clin Child Adolesc Psychol.* 2010;39:849–857.
16. Mckim RD. Rumination as a mediator of the effects of mindfulness: mindfulness-based stress reduction (MBSR) with a heterogeneous community sample experiencing anxiety, depression, and/or chronic pain. *Dissert Abstr Int.* 2008;68:7673B.
17. Lavender A, Watkins E. Rumination and future thinking in depression. *Br J Clin Psychol.* 2004;43:129–142.
18. McLaughlin KA, Nolen-Hoeksema S. Rumination as a transdiagnostic factor in depression and anxiety. *Behav Res Ther.* 2011;49:186–193.
19. Watkins ER. Constructive and unconstructive repetitive thought. *Psychol Bull.* 2008;134:163–206.
20. Segerstrom SC, Roach AR, Evans DR, et al. The structure and health correlates of trait repetitive thought in older adults. *Psychol Aging.* 2010;25(3):505–515.
21. Thomsen DK, Mehlsen MY, Olesen F, et al. Is there an association between rumination and self-reported physical health? A one-year follow-up in a young and an elderly sample. *J Behav Med.* 2004;27:215–231.
22. Zoccala PM. Prolonging the physiological stress response: the role of rumination and recall. *Dissert Abstr Int.* 2010;71:3921B.
23. Kuehner C, Huffziger S, Liebsch K. Rumination, distraction and mindful self-focus: effects on mood, dysfunctional attitudes and cortisol stress response. *Psychol Med.* 2009;39:219–228.
24. Hogan BE, Linden W. Anger response styles and blood pressure: at least don't ruminate about it! *Ann Behav Med.* 2004;27:38–49.
25. Marcus DK, Hughes KT, Arnau RC. Health anxiety, rumination, and negative affect: a mediational analysis. *J Psychosom Res.* 2008;64:495–501.
26. Soo H, Burney S, Basten C. The role of rumination in affective distress in people with a chronic physical illness: a review of the literature and theoretical formulation. *J Health Psychol.* 2009;14:956–966.
27. Miers AC, Rieffe C, Terwogt MM, et al. The relation between anger coping strategies, anger mood and somatic complaints in children and adolescents. *J Abnorm Child Psychol.* 2007;35:653–664.
28. Fink P, Ornbol E, Toft T, et al. A new, empirically established hypochondriasis diagnosis. *Am J Psychiatry.* 2004;161:1680–1691.
29. Sullivan MJL, Bishop SR, Pivik J. The Pain Catastrophizing Scale: development and validation. *Psychol Assess.* 1995;7:524–532.
30. Nijs J, Van DePutte K, Louckx F, et al. Exercise performance and chronic pain in chronic fatigue syndrome: the role of pain catastrophizing. *Pain Med.* 2008;9:1164–1172.
31. Gilliam W, Burns JW, Quartana P, et al. Interactive effects of catastrophizing and suppression on responses to acute pain: a test of an appraisal emotion regulation model. *J Behav Med.* 2010;33:191–199.
32. Tripp DA. Pain catastrophizing in athletic individuals: scale validation and clinical application. *Dissert Abstr Int.* 2002;63:1053B.
33. Sullivan MJL, Sullivan ME, Adams HM. Stage of chronicity and cognitive correlates of pain-related disability. *Cogn Behav Ther.* 2002;31:111–118.
34. Van Damme S, Crombez G, Bijttebier P, et al. A confirmatory factor analysis of the Pain Catastrophizing Scale: invariant factor structure across clinical and non-clinical populations. *Pain.* 2002;96:319–324.
35. Galfin JM, Watkins ER, Harlow T.

- Psychological distress and rumination in palliative care patients and their caregivers. *J Palliat Med.* 2010;13:1345–1348.
36. Devoulyte K, Sullivan MJL. Pain catastrophizing and symptom severity during upper respiratory tract illness. *Clin J Pain.* 2003;19:125–133.
  37. Johansen SA. Cognitive features, self-management, and disability level associated with chronic back pain. *Dissert Abstr Int.* 2008;69:1373B.
  38. Len TC, Nouwen A, Sheffield D, Jaumdally R, Lip GYH. Anger rumination, social support, and cardiac symptoms in patients undergoing angiography. *Br J Health Psychol.* 2010;15:841–857.
  39. Turner JA, Holtzman S, Mancl L. Mediators, moderators, and predictors of therapeutic change in cognitive-behavioral therapy for chronic pain. *Pain.* 2007;127:276–286.
  40. Nolen-Hoeksema S, Morrow J. A prospective-study of depression and posttraumatic stress symptoms after a natural disaster—the 1989 Loma-Prieta earthquake. *J Pers Soc Psychol.* 1991;61:115–121.
  41. Baryla W, Wojciszke B. Rumination Questionnaire. *Studia Psychologiczne.* 2005;43:5–22.
  42. Watkins ER, Mullan E, Wingrove J, et al. Rumination-focused cognitive-behavioural therapy for residual depression: phase II randomized controlled trial. *Br J Psychiatry.* 2011;July 21. E-pub ahead of print.

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